<u>In the Claims</u>:

1.(Canceled)

2.(Canceled)

3.(Canceled)

4.(Canceled)

5.(Canceled)

6.(Canceled)

7.(Canceled)

8.(Original) A method of controllably moving material comprising the steps of:

providing a microchannel device that includes a substrate having first, second, and third channels disposed therein, the first, second, and third channels communicating at a channel intersection, said second channel containing a membranous material that is characterized by an ability to conduct electrical current while inhibiting bulk material flow therethrough; and

providing a flow of a first material from said first channel into said third channel by applying a first electrical potential to said first channel and a second electrical potential to said second channel through said membranous material.

9.(Original) A method as set forth in Claim 8 wherein the membranous material is a polymeric gel.

10.(Original) A method as set forth in Claim 8 wherein the membranous material is a polyacrylamide gel.

11.(Canceled)

12.(Canceled)

13.(Canceled)

14.(Canceled)

15.(Canceled)

16.(Canceled)

17.(Canceled)

18.(Canceled)

19.(Currently Amended) A method for pumping a material through a channel comprising the steps of:

providing a microchannel device that includes a substrate having first and second channels disposed therein, said first and second channels being in fluid

communication at a channel intersection and containing a first fluidic material;

providing a membranous material in the first channel ~~adjacent to the channel intersection~~; <u>and</u>

inducing a hydraulic pressure in the second channel by applying an electrical potential between the first and second channels.

20.(Currently Amended) A method ~~as set forth in Claim 19~~ <u>for pumping a material through a channel</u> comprising the steps of:

<u>providing a microchannel device that includes a substrate having first and second channels disposed therein, said first and second channels being in fluid communication at a channel intersection and containing a first fluidic material;</u>

<u>providing a membranous material in the first channel</u>;

providing a third channel that is in fluid communication with the first and second channels at the channel intersection;

providing a second membranous material in the third channel ~~adjacent to the channel intersection~~; and

inducing ~~the~~ <u>a</u> hydraulic pressure in the second channel by applying ~~the~~ <u>an</u> electrical potential between the first and third channels.

21.(Canceled)

22.(Canceled)

23.(Canceled)

24.(Canceled)

25.(Canceled)

26.(Canceled)

27.(Canceled)

28.(Original) A device for the manipulation of liquid phase materials, comprising:

a substrate;

first and second channels formed on said substrate;

a reservoir in fluid communication with said first and second channels; and

a source of electrical potential operatively connected between said first and second channels for inducing electrokinetic transport of a fluid material from said reservoir into said second channel.

29.(Original) A device as set forth in Claim 28 wherein said first channel contains a membranous material, said membranous material being characterized by an ability to conduct electrical current while inhibiting bulk material flow therethrough.

30.(Currently Amended) A device for the manipulation of liquid phase materials, comprising:

a substrate;

first, second and third channels formed on said substrate, said first, second, and third channels being in fluidic communication at a channel junction;

a membranous material disposed in said second channel, said membranous material being characterized by an ability to conduct electrical current while inhibiting bulk material flow therethrough; and

a source of electrical potential adapted to be selectively connected to said first and second channels for inducing transport of a material in said first and third~~, and fourth~~ channels.

31.(Original) A device as set forth in Claim 30 wherein the substrate is formed of a gas-permeable material.

32.(Currently Amended) A device as set forth in Claim 31 further comprising a nonporous coverplate, formed of an electrically insulating material and affixed to said substrate and a metallic electrode formed on said nonporous plate adjacent to said ~~fourth~~ <u>first</u> channel, whereby electrical conduction can occur between said electrode and said ~~fourth~~ <u>second</u> channel.

33.(Canceled)

34.(Canceled)

35.(Canceled)

36.(New) A method as set forth in Claim 8 comprising the step of providing the membranous material as porous glass.

37.(New) A method as set forth in Claim 8 comprising the step of providing the membranous material as a channel having a transverse dimension that is similar to the thickness of the electrical double layer.

38.(New) A method as set forth in Claim 8 comprising the step of reversing the first and second electrical potentials to provide flow of the first material from the third channel into the first channel.

39.(New) A method as set forth in Claim 20 comprising the step of providing electroosmotic flow in the first membranous material that is greater than electroosmotic flow in the second membranous material.

40.(New) A device as set forth in Claim 30 wherein the membranous material comprises a polymeric material or a porous glass material.

41.(New) A device as set forth in Claim 30 wherein the membranous material comprises a channel having a transverse dimension that is similar to the thickness of the electrical double layer.

42.(New) A method for minimizing electrochemically generated species in a sample material comprising the steps of:

providing a microchannel device that includes a substrate having first and second channels disposed therein;

providing a reservoir in fluid communication with said first and second channels; and

inducing electrokinetic transport of a fluid material from the reservoir into the second channel by applying an electrical potential across the first and second channels.

43.(New) A method as set forth in Claim 42 comprising the step of providing a membranous material in the first channel, said membranous material being

characterized by an ability to conduct ionic current while inhibiting bulk transport therethrough.

44.(New) A method as set forth in Claim 43 comprising the step of providing the membranous material as a polymeric material or a porous glass material.

45.(New) A method as set forth in Claim 43 comprising the step of providing the membranous material as a channel having a transverse dimension that is similar to the thickness of the electrical double layer.

46.(New) A device for pumping a material through a channel comprising:

a substrate;

first and second channels formed on said substrate;

said first and second channels being in fluid communication at a first channel intersection;

a first membranous material disposed in the first channel; and

a source of electrical potential operatively connected to the first and second channels for inducing transport of a material in the second channel.

47.(New) A device as set forth in Claim 46 wherein the first membranous material comprises a polymeric material or a porous glass material.

48.(New) A device as set forth in Claim 46 wherein the first membranous material comprises a channel having a transverse dimension commensurate with the electrical double layer.

49.(New) A device for the manipulation of liquid phase materials comprising:

a substrate;

first, second, and third channels formed on said substrate;

said first, second, and third channels being in fluid communication at a channel intersection;

a first membranous material disposed in the first channel and a second membranous material disposed in the second channel; and

a source of electrical potential operatively connected to the first and second channels for inducing transport of a material in the third channel.

50.(New) A device as set forth in Claim 49 wherein the first and second membranous materials are selected such that electroosmotic flow in the first membranous material is greater than electroosmotic flow in the second membranous material.

51.(New) A device as set forth in Claim 49 wherein the first membranous material comprises a polymeric material or a porous glass material.

52.(New) A device as set forth in Claim 49 wherein the first membranous material comprises a channel having a transverse dimension that is similar to the thickness of the electrical double layer.

53.(New) A device as set forth in Claim 49 wherein the second membranous material comprises a polymeric material or a porous glass material.

54.(New) A device as set forth in Claim 49 wherein the second membranous

material comprises a channel having a transverse dimension that is similar to the thickness of the electrical double layer.

55.(New) A method for pumping a material through a channel comprising the steps of:

providing a microchannel device that includes a substrate having first, second, and third channels disposed therein, said first and third channels being in fluid communication at a first channel intersection, said second and third channels being in fluid communication at a second channel intersection, and containing a first fluidic material;

providing a first membranous material in the first channel and a second membranous material in the second channel; and

inducing a hydraulic pressure in the third channel by applying an electrical potential between the first and second channels.

56.(New) A method as set forth in Claim 55 comprising the step of providing a third membranous material in the third channel.

57.(New) A method as set forth in Claim 56 comprising the step of providing electroosmotic flow in the third membranous material that is greater than electroosmotic flow in the first membranous material.

58.(New) A method as set forth in Claim 55 comprising the step of providing electroosmotic flow in the first membranous material that is greater than electroosmotic flow in the second membranous material.

59.(New) A method as set forth in Claim 55 wherein the step of providing the first membranous material comprises providing a polymeric material or a porous glass material as the first membranous material.

60.(New) A method as set forth in Claim 55 wherein the step of providing the first membranous material comprises forming at least one channel in the first channel that has a transverse dimension that is similar to the thickness of the electrical double layer.

61.(New) A method as set forth in Claim 55 wherein step of providing the second membranous material comprises providing a polymeric material or a porous glass material as the second membranous material.

62.(New) A method as set forth in Claim 55 wherein the step of providing the second membranous material comprises forming a channel in the second channel that has a transverse dimension that is similar to the thickness of the electrical double layer.

63.(New) A method as set forth in Claim 56 wherein the step of providing the third membranous material comprises providing a polymeric material or a porous glass material as the third membranous material.

64.(New) A method as set forth in Claim 56 wherein the step of providing the third membranous material comprises forming a channel in the third channel that has a transverse dimension that is similar to the thickness of the electrical double layer.

65.(New) A device for the manipulation of liquid phase materials comprising:

a substrate;

first, second, and third channels formed on said substrate;

said first and third channels being in fluid communication at a first channel intersection;

said second and third channels being in fluid communication at a second channel intersection;

a first membranous material disposed in the first channel and a second membranous material disposed in the second channel; and

a source of electrical potential operatively connected to the first and second channels for inducing transport of a material in the third channel.

66.(New) A device as set forth in Claim 65 wherein a third membranous material is disposed in the third channel.

67.(New) A device as set forth in Claim 66 wherein the first and third membranous materials are selected to provide electroosmotic flow in the third membranous material that is greater than electroosmotic flow in the first membranous material.

68.(New) A device as set forth in Claim 66 wherein the first and second membranous materials are selected to provide electroosmotic flow in the first membranous material that is greater than electroosmotic flow in the second membranous material.

69.(New) A device as set forth in Claim 65 wherein the first membranous material comprises a polymeric material or a porous glass material.

70.(New) A device as set forth in Claim 65 wherein the first membranous material comprises a channel having a transverse dimension that is similar to the thickness of the electrical double layer.

71.(New) A device as set forth in Claim 65 wherein the second membranous material comprises a polymeric material or a porous glass material.

72.(New) A device as set forth in Claim 65 wherein the second membranous material comprises a channel having a transverse dimension that is similar to the thickness of the electrical double layer.

73.(New) A device as set forth in Claim 66 wherein the third membranous material comprises a polymeric material or a porous glass material.

74.(New) A device as set forth in Claim 66 wherein the third membranous material comprises a channel having a transverse dimension that is similar to the thickness of the electrical double layer.